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On the African species of the genus *Synchortus* Sharp (Coleoptera: Dytiscidae) and the description of a new species

by

JOYCE OMER-COOPER

Rhodes University, Grahamstown

Study of types and identified material points to the validity of six African *Synchortus* species:— *imbricatus* (Klug), *teleupi* Guignot, *desaegeri* Gschwendtner, *simplex* Sharp, *abditus* Guignot and *separatus* spec. nov. *S. aequatorius* Guignot is placed as a synonym of *imbricatus*, and *sparsus* Sharp as a synonym of *simplex*. No comment is possible on *S. dabbeni* Régimbart of which the unique type cannot be traced. The aedeagus of *S. desaegeri* is figured.

The species of the genus *Synchortus* Sharp (subfamily *Noterinae*) occur only on the continent of Africa and in Madagascar. The Madagascar species are not discussed in this paper.

Eight species have been named from Africa: *S. imbricatus* (Klug), *S. aequatorius* Guign., *S. simplex* Shp (= *aciculatus* Shp), *S. sparsus* Shp, *S. desaegeri* Gschw. (= *Hydrocoptus rhipax* Guign.), *S. abditus* Guign., *S. leleupi* Guign. and *S. dabbeni* Rég. The latter has not been recognised since it was first described and, as the unique type can not now be found, the accuracy of the description and the specific status of the type can not be checked.

All these species are much alike and more or less variable; their size ranges from 2,3–3,8 mm and their colour, often in one species, from light testaceous to dark brown with the head and sides of the pronotum lighter. The type of elytral punctuation found throughout the genus is peculiar. The longitudinal discal serial row of punctures on the elytron of the male consists usually of punctures slightly asperate but almost normal in appearance although there may be specific and individual variation in this, and these are supplemented at the sides and apex by a varying number of asperate or squamous punctures. In the female these punctures are usually larger and more numerous and, even within a species, the variability is very great; some individuals are very little different from the male whilst in others the elytra may be covered, except, generally, for a small anterior juxta-sutural area, by conjoint squamous punctures forming imbrications. The presence or absence of a more or less regular row of discal punctures on the elytra extending for at least half the elytron length is a character which may be used to divide the genus into two groups of species. Apart from this, body shape and size, which are however variable within limits, the shape of the metacoxal processes and the aedeagus may indicate specific differences.

Unfortunately aedeagal differences may be slight and to add to the difficulties of identification some individuals have their aedeagi reversed i.e. they are mirror images of the usual condition.

The median lobes drawn in the figures are in side view, apex forward as is conventional. It must be remembered that in this position the apparent right side is really the left since *in situ* the apex of the median lobe is directed backwards.

In the normal aedeagus when the left side of the median lobe is viewed the curvature is to the left as in fig. 1. The right side is recognisable as it unites with the left behind the apex and is free at the base and shorter than the other side. Fig. 3 illustrates this condition although it shows in fact the left side of a mirror image median lobe. The right side of a mirror image median lobe, corresponding in structure to the left side of a normal median lobe, curves to the right. In the mirror image aedeagi the right paramere becomes the left and the left the right. Figs. 3b and 14b show the structurally equivalent parameres in the two types of aedeagi; in 3b the left paramere of a mirror image aedeagus, in 14b the right paramere of a normal aedeagus. The other paramere is different in design; fig. 14c shows the left paramere of a normal aedeagus.

It is important for comparison of the median lobes that the angle of view, especially of the apical region should be the same in all cases. I have attempted to achieve this in my illustrations.

Together with material in my own collection, I have examined specimens kindly lent me by various museums. These include the type of *S. simplex* Sharp; specimens misidentified by Guignot as *S. simplex;* the type series of *S. imbricatus* (Klug), unfortunately all females; paratypes of *aequatorius* Guignot; various specimens named by Balfour-Browne; and the types of *S. leleupi* Guignot and *S. desaegeri* Gschwendtner. Intensive study of this material indicates that, in the present state of our knowledge, evaluation of specific rank must very largely be a matter of personal opinion. The following notes summarize my views.

Group I. Species without a clear regular or almost regular discal serial row of punctures extending for at least half of the length of the elytron.

Synchortus imbricatus (Klug, 1853)

Noterus imbricatus Klug, 1853: 249.
Noterus imbricatus Klug, 1862: 176 Taf. X, figs. 10 & 11.
Synchortus imbricatus (Klug); Sharp, 1882: 823; Balfour-Browne, 1939: 476.
Synchortus aequatorius Guignot, 1936: 38, 39. (**Syn. nov.**)
Synchortus simplex; Guignot *nec* Sharp; Guignot, 1936: 38; 1959: 476; Omer-Cooper, 1957: 364 (misid.).

The measurement of 3½ lines given by Klug in his description of 1853 is not in accordance with that of the type series and in 1862 was corrected by him to 2½ lines i.e. approximately 3½ mm (Balfour-Browne first drew my attention to this correction). The first measurement is the one quoted by Guignot and has hindered identification of the species.

In 1936 Guignot described *S. aequatorius* from Uganda and in 1939 Balfour-Browne identified specimens also from Uganda as *imbricatus* (Klug). In 1959 Guignot homologised Balfour-Browne's *S. imbricatus* with *S. aequatorius*. Having seen Guignot's type, a paratype and a specimen from the Congo named by him, as well as two of Balfour-Browne's specimens I have no doubt that the aedeagi correspond although in

Guignot's type and paratype the aedeagi are normally orientated and in Balfour-Browne's reversed (figs. 5 & 6). Guignot's specimen from the Congo also has the aedeagus reversed.

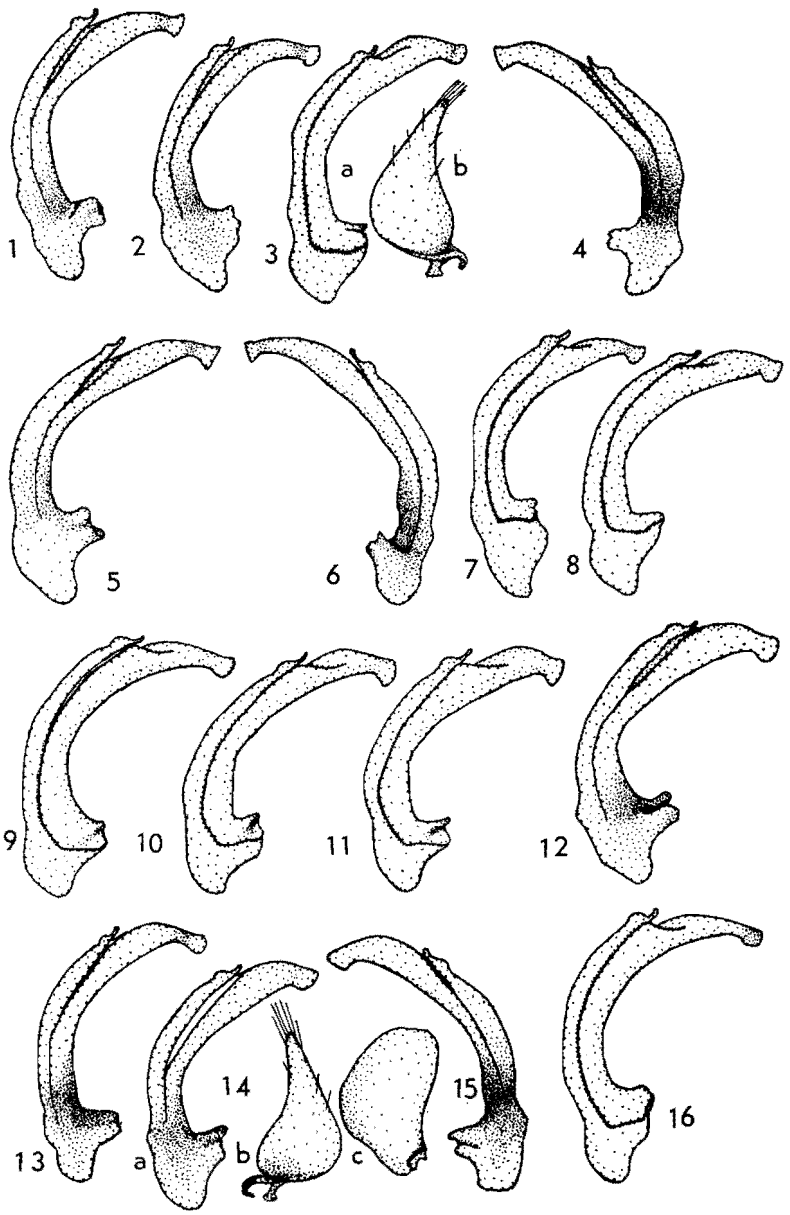
The type locality of *S. imbricatus* is Tête, Mozambique. From the Umbeluzi River, near Goba, and from Beira (both in Mozambique) I have a series of specimens the majority of whose aedeagi differ very slightly from those of *aequatorius* in that in side view the widening behind the apex commences more abruptly (figs 1, 3 & 4). There is however variation and a few have the median lobe indistinguishable with certainty from that of *S. aequatorius* Guign. (fig. 5). These specimens have no external characters to distinguish them from the others. Only three out of the twenty males have a normally orientated aedeagus. Their size varies from 3,3 mm—the smallest male—to 3,8 mm—the largest female. All are long and narrow in shape, as in the type of *S. imbricatus*, and the punctuation of the elytra of the females varies from not very dense, irregularly placed asperate punctures to an almost complete cover of imbrications as it does in the type series of *S. imbricatus*. The majority have no regular discal serial row of punctures on the elytron but a few have an indication of one at the base. It seems reasonable to conclude that all these are *S. imbricatus* and, since it is impossible to separate without dissection those with an *S. aequatorius* median lobe, the two species are put into synonymy.

From Malawi I have a series which in my opinion are also *S. imbricatus*. They are elongate but with the sides of the elytra a little more rounded than is the case in the Mozambique specimens and the average size a little smaller although the actual size range is 3,2–3,8 mm. The majority of the median lobes of the aedeagi resemble those of the Mozambique specimens but some are inseparable from those of *S. aequatorius* on the one hand and of specimens from the R. Omo mistakenly identified as *S. simplex* Shp. by Guignot on the other (figs 9–12.) The majority have their aedeagi reversed but in most of the localities from which they were taken both forms occurred. In a series of 26 males from a 'dambo' (reed swamp) on the shores of L. Nyasa below the mission station of Livingstonia only two are normally orientated. A number of the females have strongly imbricate elytra.

From Mtubatuba, Natal, my series contains six males all with aedeagi reversed and ranging from the *aequatorius* type to that of the more extreme *S. imbricatus* (Klug) from Mozambique (fig. 4). Three of the five females have imbricate elytra. The length varies from 3,2–3,8 mm and the shape from elongate and narrow to narrow oval. I can see no reason for separation from Klug's species.

The same holds good for a long series of individuals from the southern Sudan although at first sight it might seem legitimate to consider them to be a geographical subspecies. Their size is smaller 2,9–3,1 mm, with the sides of the elytra slightly more rounded than is the case even in the Malawi examples, and with a higher proportion of specimens showing a fairly clear short row of serial punctures at the base of the elytra. The median lobes of the aedeagi vary from *aequatorius* type, through *imbricatus* to Guignot's "*Simplex*" (figs 12–16) and again it has not been possible to correlate any difference in individual shape, punctuation, nor underside characters with variation in the aedeagus.

Of the 51 males dissected 44 have normally orientated aedeagi and 7 reversed ones. Neither the normal nor reversed are constant in shape and both types were taken in the same collections. Of the two males from L. Minkammon one is normal and one reversed and from the reed beds around L. Shambe 24 are normal and 5 reversed. Some of the females have imbricate elytra.



A specimen from the R. Omo erroneously identified and described by Guignot (1936 & 1959) as *S. simplex* Sharp looks like a different species. The sides of the pronotum are straight behind, the elytra parallel-sided for the greater part of their length and the median lobe of the aedeagus is as in fig. 22. Another specimen from the Congo also named *S. simplex* by Guignot has a very different appearance, the sides of the pronotum more rounded, the shoulders of the elytra wider, the sides more rounded and more attenuate behind yet the median lobe of the aedeagus remains almost identical. A series from Nigeria contains individuals approximating very closely to this form, some have a similar aedeagus but others have the median lobe very close to that of *aequatorius* with no other external character to distinguish one from the other (figs 17–21). In this series too some aedeagi are reversed and some females densely imbricate. It seems more than probable that Guignot's incorrectly determined *S. simplex* and individuals from Nigeria, Sudan, and Malawi are but variants of the species *S. imbricatus*.

DISTRIBUTION. Mozambique (type); Spanish Guinea; Nigeria (!); Sudan (!); S. Ethiopia (!); Malawi (!); S. Africa, Natal (!).

Synchortus leleupi Guignot, 1956

L. 3,1–3,4 mm. This species appears to be a valid one. Guignot (1956: 50) describes it as 'ovale, allongé, peu large, attenué en arrière' but the type is widely oval and convex. It measures 3,1 mm. The elytra are sparingly punctured with asperate punctures and a discal row of fine widely spaced asperate punctures is visible for almost half the length of the elytra. The median lobe of the aedeagus is as in fig. 23 and the right paramere is narrower than in *S. imbricatus*.

DISTRIBUTION. Belgian Congo (type); Uganda (!).

Synchortus desaegeri Gschwendtner, 1935

Hydrocoptus rhipax Guignot, 1957: 152.

L. 2,1–2,5 mm. This species was described by Gschwendtner (1935:372) from a female from the Lukuga river which enters the west shore of L. Tanganyika. The male has been described by Guignot under the name of *Hydrocoptus rhipax* later corrected

Figs. 1–3. Left side of median lobes of the aedeagi of *S. imbricatus* (Klug) from Mozambique. 1–2 normal aedeagi, 3 mirror image aedeagus a. left side of median lobe. b. left paramere (corresponding to right paramere of normal aedeagus). 4. Right side of the median lobe of a mirror image aedeagus of *S. imbricatus* (Klug). 5. Left side of the median lobe of a normal aedeagus of *S. aequatorius* Guign. 6. Right side of the median lobe of a mirror image aedeagus of *S. imbricatus* (Klug) *teste* Balfour-Browne, from Uganda. 7–8. Left side of median lobes of mirror image aedeagi of individuals of *S. imbricatus* (Klug) from Natal. 9–11. Left side of median lobes from mirror image aedeagi of individuals of *S. imbricatus* (Klug) from Malawi. 12. Left side of the median lobe of a normal aedeagus from an individual of *S. imbricatus* (Klug) from Malawi. 13. Left side of the median lobe of a normal aedeagus of an individual of *S. imbricatus* (Klug) from the Sudan. 14. Normal aedeagus of another individual of *S. imbricatus* (Klug) from the Sudan. a. left side of the median lobe. b. right paramere. c. left paramere. 15. Right side of the median lobe of a mirror image aedeagus of another individual of *S. imbricatus* (Klug) from the Sudan. 16. Left side of the median lobe of another mirror image aedeagus of *S. imbricatus* (Klug) from the Sudan.

by him in manuscript to *Synchortus desaegeri* Gschw. This synonymy has been published by Balfour-Browne (1961: 60)*. When a male *H. rhipax* and the female type of *S. desaegeri* are compared there can be no doubt that they belong to the same species although there stands in the Tervuren Museum a completely different male *Synchortus* from Kasenyi, Congo, attributed to *desaegeri* by Gschwendtner himself. Unfortunately the median lobe of the aedeagus of this specimen is broken and the apex missing so that it is not possible to be absolutely certain of its identity. In my opinion it is a male *S. abditus* Guign.

The species is very distinct for, apart from its small size, both male and female have the elytra almost covered by irregularly placed squamous or large granular punctures without any trace of a discal serial row. The metacoxal processes are widely divergent and end bluntly. The median lobe and right paramere are shown in fig. 30, a, b & c. In both my males from L. Shambe, Sudan, the ligule of the median lobe is almost hidden.

DISTRIBUTION. Congo: R. Lukuga, ♀-holotype; L. Edward, ♂-holotype (*Hydrocoptus rhipax* Guign.); L. Albert; Sudan, L. Shambe (!).

Group II. Species with a regular or almost regular serial row of punctures on the disc of the elytron extending for at least half of its length.

Synchortus simplex Sharp, 1882

Synchortus aciculatus Sharp, 1882: 264.
Synchortus sparsus Sharp, 1882: 264; Guignot, 1936: 39; 1959: 476 (**syn. nov.**)

L. 3,2–3,5 mm. The type of this species is oval, rather abruptly narrowed behind, brownish testaceus with the pronotum and head lighter. There is a clear discal serial row of close set almost asperate punctures in the first half of the elytron which become a little larger and more widely spaced in the second half. There are supplementary asperate punctures at the sides and in the apical third but these are not evidently denser behind. The median lobe of the aedeagus is illustrated in fig. 25 (note the longer and narrower 'neck' of the ligule).

Unfortunately the type of *S. sparsus* is a female. The only characters given by Sharp to separate it from *S. simplex* and *S. aciculatus* (accepted by authors as a female *simplex*) are the larger size and smaller punctures on the elytra. In my series of *S. simplex* from Ethiopia all the individuals are a little larger than the type of *simplex* but the aedeagi of the males correspond with that of *simplex* and some of the females agree with Sharp's description of *sparsus*. In the circumstances I agree with Régimbart (1895: 120) that *sparsus* is no more than a variety. Since in his revision, Guignot (1959) has mistaken the identity of Sharp's *simplex* and refers to that species as *sparsus* acceptance of the synonymy would avoid confusion.

There are no reversed aedeagi nor imbricate females in my collection of *simplex* which includes individuals from Ethiopia, Uganda, Malawi, Rhodesia, Mozambique and Zululand, S. Africa. The types of *S. simplex* and *S. sparsus* are both from Gabon.

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* Also by Guignot 1959, *Revue Zool. Bot. afr.*: 231.

Synchortus abditus Guignot, 1957

Guignot (1957: 155) separated *abditus* from *simplex* (*sparsus* to Guignot) on the grounds of smaller size, 2,6–3,1 mm, the shorter apical region of the median lobe of the aedeagus and the straight, instead of turned up end of its ligule (fig. 24). The metacoxal processes are also shorter and less sharply pointed. These differences appear to be constant and uphold the validity of the species.

DISTRIBUTION. Congo (type); Southern Ethiopia (R. Omo); Upper Senegal; Sudan (!); Nigeria (!).

There are no reversed aedeagi nor imbricate females amongst the individuals in my collection.

Synchortus separatus spec. nov., figs 27, 28

L. 2,8–3,2 mm. Rather widely oval, usually, but not always, rather abruptly narrowed behind. The colour varies from rufo-testaceus, with head and pronotum lighter, to brown with the front of the head and sides of the pronotum lighter.

Head. Testaceus; reticulate; unpunctured except for a row of large punctures along the inner margin of the eyes. Antennae testaceus with antennal joints 7–10 widened and serrate on the inner side as is usual.

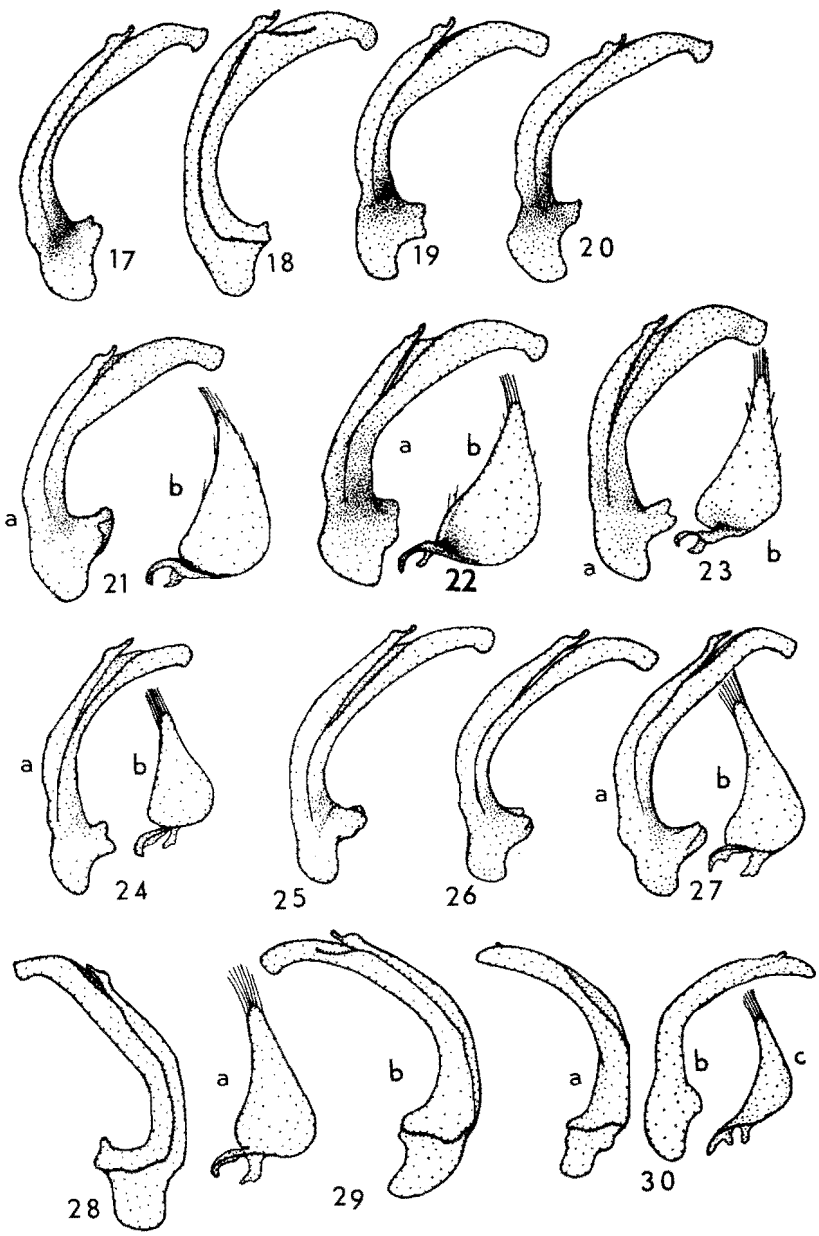
Pronotum. Testaceus with a narrow anterior and posterior band brown, or brown with the sides lighter. Reticulate and virtually unpunctured except for the usual anterior transverse row and small basal group of punctures. Under high magnification a few very fine punctures are visible at the sides of the disc. Sides rounded in front, almost straight behind.

Elytra. Rufo-testaceus or brown with the sides lighter. Irregularly and finely longitudinally striate with a very fine reticulation visible here and there. Discal serial row of punctures almost regular and usually clearly visible from the base to near the apex but the punctures composing it varying in different individuals from small scarcely asperate to larger almost squamous ones. This is particularly true of the females. There is a juxta-sutural anterior space clear of punctures but a varying number of irregularly placed asperate or squamous punctures at the sides and posteriorly. The usual cluster of punctures at the base of the discal serial row and the usual short transverse basal row are both present.

Underside. Testaceus with the hind tarsi darker; metasternum and coxal processes reticulate, metacoxae transversely striate with a few fine punctures behind. Metacoxal processes finely pointed.

MALE. The aedeagus resembles that of *simplex* but is quite distinct. The median lobe is narrower and more sinuate whilst the separation of the two sides occurs dorsally instead of laterally and the 'neck' of the ligule is even longer and narrower with the apical swelling more nearly triangular. The apical region of the right paramere is also narrower than in allied species (figs 27, 28). I have seen no reversed aedeagi.

FEMALE. The elytral punctuation of the female varies as in all the *Synchortus* species. Some have only a few more asperate punctures than the male, in others the punctures are more numerous and squamous, sometimes close set, but I have seen no imbricate females.



DISTRIBUTION. Sudan: L. Nyibor 25.i.1954 ♂-holotype and ♀-allotype; L. Shambe, 21.i.1954; L. Baya, 14.i.1954; L. Yirol, 16.i.1954, Wulu, 19.i.1954; River at Tombe, 17.i.1954; Lake at Minkammon, 16.i.1954 (all paratypes). Nigeria: University fish pond, Ibadan, 23.iii.1963; Marsh, Katsina-Daurra rd., 6.iv.1963; Stream, Fantua-Katsina rd., 5.iv.1963; Stream and reservoir, Vom, Jos plateau, 11.iv.1963.

The type will be deposited in the British Museum (Natural History), London.

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Figs. 17–20. Left side of the median lobes of the aedeagus of *S. imbricatus* (Klug) from Wulgo, Nigeria (18. from a mirror image aedeagus). 21a. Left side of the median lobe of a normal aedeagus of *S. imbricatus* (Klug) from Posticum, Nigeria. (Note resemblance to that of *S. simplex sensu* Guignot, fig. 22.) b. right paramere. 22a. Left side of the median lobe of the aedeagus of *S. simplex Sensu* Guignot from R. Omo. b. Right paramere. 23. Left side of the median lobe of the aedeagus of *L. leleupi* Guign. 24a. Left side of the median lobe of the aedeagus of *S. abditus* Guign. b. right paramere. 25. Left side of the median lobe of the aedeagus of *S. simplex* Sharp (type). 26. Left side of the median lobe of the aedeagus of an individual of *S. simplex* Shp. from Malawi. The apex is more curved than is usual. 27a. Left side of the median lobe of the aedeagus of *S. separatus* spec. nov. b. right paramere. 28. Right side of the median lobe of the aedeagus of *S. separatus* spec. nov. 29a. right paramere. b. right side of the median lobe of the aedeagus of an individual of *S. simplex* Shp. from Malawi. 30a. Right side of the median lobe of the aedeagus of *S. desaegeri* Gschw. b. left side of the median lobe. c. right paramere.